NATIONAL PARK SERVICE
ENVIROFACTS
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National Park Service
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LABORATORY WASTE MANAGEMENT

DEFINITIONS
Laboratory (Lab) Waste: Regulated waste that is unique to the National Park Service laboratories.

APPLICABLE STANDARDS

Federal: There is no single regulation covering all aspects of lab waste management. Some lab waste is subject to the Environmental Protection Agency's (EPA's) Resource Conservation and Recovery Act (RCRA) requirements. Laboratory wastes disposed of down the drain or entering a waterway are subject to EPA's Clean Water Act (CWA) regulations. The Occupational Safety and Health Administration's (OSHA's) Laboratory Standard (29 CFR 1910.1450) requires that a laboratory's Chemical Hygiene Plan include a procedure for lab waste. The Department of Transportation's (DOT's) regulations specify packaging, marking, labeling and paperwork requirements for hazardous waste transport.

State: State agencies often have more stringent requirements, and should be reviewed.

Local: Local governments that operate wastewater treatment plants typically have strict discharge limits to which labs must comply.

HANDLING

Know the hazards of laboratory wastes BEFORE handling. Often, MSDSs for laboratory chemicals can be helpful in gaining an understanding of the hazards of the waste.

Be sure that wastes are accumulated and stored in appropriate containers. Take precautions to ensure that incompatible wastes are not placed in the same container. Wear appropriate personal protective equipment (e.g., gloves, aprons, splash goggles, and possibly respiratory protection) when transferring wastes.

Hazardous lab waste must be accumulated according to RCRA requirements for three classes of generators. Generators are defined by site, so lab hazardous waste is counted along with all other hazardous waste generated at the site (i.e., park) to determine generator class.

Lab hazardous waste may include "satellite" accumulation areas as long as containers are in good condition, compatible with the waste, and labeled as to the contents. Satellite accumulation limits are one quart of acutely hazardous waste or 55 gallons of hazardous waste.

DISPOSAL

Hazardous lab waste is disposed of by sending it to a RCRA-permitted treatment, storage or disposal park (TSDF). Hazardous waste must be transported according to DOT regulations and be accompanied by a hazardous waste manifest. Hazardous waste generators should maintain copies of manifests indefinitely. Hazardous lab waste may not be disposed of via evaporation in the fume hood since RCRA requires hazardous waste containers be closed except when adding or removing waste. Some lab wastes can be discharged down the drain, but only if in accordance with local wastewater regulations, permits, and policies.

SPECIAL TOPICS

Characterization

It is vital to determine if lab waste is subject to RCRA. RCRA hazardous wastes are those included on one of four lists in 40 CFR 261 or those exhibiting a particular hazardous characteristic. For laboratories, the most relevant listings are those for spent solvents such as acetone, methylene chloride, and methanol (F-list) and the discarded commercial chemical products lists (P-and U-lists). The four hazardous waste characteristics are ignitability, corrosivity, reactivity, and toxicity. Lab hazardous waste determination can be tricky. For example, unused discarded formaldehyde is a U-listed waste (U-122). However spent formaldehyde is not listed, but may be hazardous based upon characteristics.

Prevent mixing hazardous waste and non hazardous waste since, generally, any waste mixed with a listed waste is considered hazardous.

Permitting

Rarely are labs permitted for waste disposal under RCRA since it is costly and burdensome; however, RCRA does allow treating hazardous waste on-site without a permit. Specifically, EPA allows elementary neutralization (i.e., pH adjustment) of hazardous wastes. Also, EPA and some states allow the following sorts of treatment without obtaining a permit: recycling (e.g., solvent distillation), burning on-site in furnaces or boilers, and treating hazardous wastes in accumulation containers (e.g., precipitating a toxic metal out of an aqueous solution). Check with state authorities first!

For lab wastewater, parks may be subject to special provisions in a treatment plant's wastewater permit.

Exemptions

Lab samples and empty containers are often excluded from hazardous waste regulations.

Recordkeeping

Records documenting waste characterization, personnel training, inspections, emergency planning and proper disposal must be maintained (40 CFR 262).

POLLUTION PREVENTION

Minimizing lab waste is encouraged by EPA. Additionally, the price of chemicals combined with disposal costs, as well as liability concerns, provide strong incentives for source reduction and recycling. Often labs can reduce waste generated by substituting less hazardous reagents for traditional ones. Also, new technologies or techniques can lead to waste minimization (e.g., microscale testing and microwave digestion). Preclude excessive ordering of chemicals by scrutinizing purchase requests for chemicals that are especially hazardous to personnel and the environment. Procurement control is required by OSHA's Lab Standard.

ENVIROFACTS X-REFERENCES
• Environmental Training
• Hazard Communication
• Hazardous Waste Characterization
• Hazardous Waste Recordkeeping
• Spent Solvent Waste
• Laboratory Chemical Management

LABORATORY WASTE MANAGEMENT CHECKLIST

Checklist Item	Notes
1. Determine if your laboratory generates hazardous waste.	
2. Confirm that your Lab has procedures to correctly identify and characterize RCRA hazardous waste.	
3. Assure that the hazardous waste accumulation containers in the laboratory are: • closed, except when adding or removing waste. • in good condition, and properly labeled. • used to consolidate compatible waste only.	
4. Confirm that hazardous waste satellite accumulation areas are limited to 1 quart of acutely hazardous waste and 55 gallons of hazardous waste.	
5. If your site is a CESQG or SQG, confirm that the accumulation of acutely hazardous waste limited to 1 kg.	
6. Confirm that emergency equipment such as spill control equipment, fire extinguishers, and a telephone or two-way radio are present at your hazardous waste accumulation area.	
7. Confirm that once hazardous waste is moved from the laboratory, it is dated and then accumulated on-site for: • less than 90 days for LQG. • less than 180 days for SQGs (unless the TSDF is >200 miles away, then less than 270 days).	
8. Assess how laboratory waste is disposed (e.g., to a RCRA-permitted TSDF, to a landfill, down the drain, treated on site).	
9. Ensure that hazardous waste transported off site is packaged, marked and labeled in accordance with DOT regulations and accompanied by a properly completed hazardous waste manifest.	
10. Ensure that laboratory wastewater discharges are in compliance with applicable standards and permit provisions.	
11. Confirm that laboratory personnel have received training with respect to their waste management responsibilities.	
12. Ensure that the laboratory's Chemical Hygiene Plan includes a procedure for managing lab waste.	
13. Ensure that personnel are investigating improved processes or equipment that might decrease the quantity or toxicity of waste generated by your laboratory.	